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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,942	04/02/2004	Yo-Shen Lin	CMDP0010USA	2941
27765	7590	05/03/2005	EXAMINER	
NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)			HAM, SEUNGSOOK	
P.O. BOX 506			ART UNIT	PAPER NUMBER
MERRIFIELD, VA 22116			2817	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/708,942	LIN ET AL.	
	Examiner	Art Unit	
	Seungsook Ham	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10, line 10, "m capacitor-inductor pairs" and line 23, "m being a **nonnegative** integer" are confusing since the limitation recited in lines 10-18 become irrelevant if m=0. The examiner suggests amending "nonnegative" to --positive--.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/708,619 in view of Uchida et al. (US '689).

Art Unit: 2817

The instant claims are the same except negative mutual inductance exists between the first and second inductors. However, providing negative or positive inductance between two inductors is well known in the art.

Uchida et al. discloses a low pass filter having first and second inductors providing negative (fig. 12) or positive (fig. 13) mutual inductance.

It would have been obvious to one of ordinary skill in the art to provide negative mutual inductance between the first and second inductors in the claimed device to obtain a desired filter response as taught by Uchida et al. (col. 1, lines 19-43).

Regarding to claim 10, the limitation recited in lines 10-18, "m capacitor-inductor pairs...is the final node of each preceding capacitor-inductor pair" has not been considered since "m" can be equal to zero (see 35 USC 112, 2nd paragraph rejection).

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9, 10-17, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515).

Kaneko et al. (figs. 1-5) discloses a lowpass filter formed in a multi-layered substrate comprising: a first capacitor 21 (figs. 2 and 5) formed on at least one layer of

Art Unit: 2817

the multi-layered substrate 23-26 and being electrically connected to a first node 33 (fig. 4); a first inductor 7 being electrically connected to the first capacitor at the first node; a second inductor 15 being electrically connected to the first inductor and the first capacitor at the first node; wherein the first and second inductors have reverse orientations for creating the negative mutual inductance (col. 2, lines 53-60); the first capacitor is electrically connected to ground 32; and the first and second inductors are disposed on at least one layer of the multi-layered substrate forming a rectangular spiral form (fig. 1). It should be noted that the first capacitor is a MIM capacitor (fig. 2).

Phillips, Jr. (figs. 1, 2, 7, and col. 4, lines 42-65) also discloses a lowpass filter formed in a multi-layered substrate comprising: a first capacitor 338 (see fig. 7) formed on at least one layer of the multi-layered substrate and being electrically connected to a first node 390 (fig. 7); a first inductor 312 being electrically connected to the first capacitor at the first node; a second inductor 314 being electrically connected to the first inductor and the first capacitor at the first node; wherein the first and second inductors have reverse orientations for creating the negative mutual inductance (see fig. 2 and abstract); the first capacitor is electrically connected to ground 332; and the first and second inductors are disposed on at least one layer of the multi-layered substrate forming a rectangular spiral form (fig. 2). It should be noted that the first capacitor is a MIM capacitor (fig. 5).

Tomaru (figs. 1(A)-2(C)) discloses a lowpass filter formed in a multi-layered substrate comprising: a first capacitor 18 formed on at least one layer of the multi-layered substrate and being electrically connected to a first node D4; a first inductor 14

Art Unit: 2817

being electrically connected to the first capacitor at the first node; a second inductor 16 being electrically connected to the first inductor and the first capacitor at the first node; wherein the first and second inductors have reverse orientations for creating the negative mutual inductance (see abstract); the first capacitor is electrically connected to ground 24; and the first and second inductors are disposed on at least one layer of the multi-layered substrate forming a rectangular spiral form (fig. 1(A)). It should be noted that the first capacitor is a MIM capacitor (fig. 1(A)).

Regarding to claim 10, the limitation recited in lines 10-18, "m capacitor-inductor pairs...is the final node of each preceding capacitor-inductor pair" has not been considered since "m" can be equal to zero (see 35 USC 112, 2nd paragraph rejection).

The subject matter of claims 7 and 17 are inherent from the devices of Kaneko et al., Phillips, Jr. and Tomaru since the claimed invention is identical to the devices of Kaneko et al., Phillips, Jr. and Tomaru.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515) in view of Lo (US '925).

Art Unit: 2817

Kaneko et al. (US '517), Phillips, Jr. (US '400) and Tomaru (JP '515) do not show the device can be made on a LTCC substrate.

Lo discloses advantages of using LTCC substrate for a multi-layered substrate device (col. 1, lines 22-33).

It would have been obvious to one of ordinary skill in the art to use LTCC substrate for the device of Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515) to reduce the size and the cost of the device as taught by Lo (col. 1, lines 22-33).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515) in view of Wheeler (US '857, insofar as understood).

Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515) does not show a plurality of cascaded lowpass filter. However, providing more than one lowpass filter is well known in the art. Wheeler (fig. 1d) discloses a 5th order lowpass filter.

It would have been obvious to one of ordinary skill in the art to provide a plurality of lowpass filter in a cascade arrangement in the device of Kaneko et al. (US '517), Phillips, Jr. (US '400) or Tomaru (JP '515) since such design technique is well known in the art as shown by Wheeler, and it requires only a routine skill in the art. It is inherent that a negligible mutual inductance existed between the inductors that are not connected in a common mode.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2817


Kameya and Johnson disclose a low pass filter connected in a cascade arrangement; and

Smith et al. discloses a side-by-side inductor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Seungsook Ham
Primary Examiner
Art Unit 2817

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